PATENT SPECIFICATION

814,269

Date of Application and filing Complete Specification: June 6, 1957. No. 18054/57.

Application made in United States of America on June 18, 1956.

Complete Specification Published: June 3, 1959.

Index at acceptance:—Class 91, O3G2.

International Classification:—C10g.

COMPLETE SPECIFICATION

Method and Device for Increasing the Combustion Efficiency of Liquid Fuels

I, CESARE SARANGA, a citizen of Italy, of 3049, Perry Avenue, Bronx, New York, State of New York, United States of America, do hereby declare the invention, for which I pray that a patent may be granted to me, and the method by which it is to be performed, to be particularly described in and by the following statement:—

The present invention relates to a method and a device for increasing the combustion efficiency of liquid fuel such as gasoline and fuel oil.

When the device was tested it was found to increase the combustion efficiency of fuels by 33%. The percentage of carbon dioxide produced by the combustion increased to 14%, a substantial improvement on a previous high of 12.5%. A higher flash point was also observed.

The invention will be more clearly understood with reference to the accompanying drawings in which:—

Fig. 1 is a general perspective view of a preferred embodiment of the invention;

Fig. 2 is a longitudinal section of the device shown in Fig. 1;

Fig. 3 is a section along the line 3–3 of Fig. 2; and

Fig. 4 is a detail showing one of the permanent magnets.

Referring more particularly to the drawings in which like reference characters indicate like elements throughout, the preferred embodiment, according to the present invention, comprises a tubular receptacle 1 closed at both ends by caps 2 and 3. To both caps are attached rubber insulators 4 by means of nuts 6 and washers 7. The insulators support electrodes 8 which extend axially of the receptacle 1 and are made of manganese steel. Alternating current from a supply circuit 5 is fed to said electrodes by means of leads 9. A threaded pipe 10, attached to cap 2, provides an inlet for the fuel. A similar pipe 11, attached to cap 3, provides an outlet for the fuel. Three magnets 12, in the form of perforated discs, are spacedly disposed in the receptacle 1 in planes at right angles to the electrodes 8. The poles of the magnets are the faces of the discs and these poles are disposed, as shown in Fig. 2 by the letters S (South) and N (North), in such a way that similar poles are facing each other. An opening 13 is provided in the magnets for the flow of the fuel. A film of pure mercury 14 forms an electrolytically deposited coating on the inside surface of the receptacle 1 and of the caps 2 and 3. Since poles of similar polarity are facing each other, there is a repulsive magnetic field between the magnets. This field is amplified by the presence of mercury, since mercury provides total impermeability of the inner surface of the device and acts as a shield for the magnetic field. The mercury also makes the metal of the receptacle impenetrable by the fuel itself.

When the fuel flows through the apparatus there is produced an electrostatic field between the electrodes. The apparatus is connected in series in the feed line of the burner or the engine at a short distance therefrom.

The theory justifying the favourable practical results of the apparatus is not completely understood. It is supposed that a certain amount of decomposition takes place in the fuel due to the combination of the repulsive magnetic field and of the electrostatic field present in the apparatus and acting on the fuel. This decomposition is only temporary, and within a few minutes the fuel returns to its original state. In the practice of the device, however, the oil is utilized before it returns to this original state. Due to the short time in which the fuel is in a decomposed state, it has not been possible to obtain data on the nature of the temporary decomposition. It is thought that, due to the repulsive field, there takes place in the apparatus a complete alignment of the molecular systems which

may cause the above mentioned decomposition. The decomposition may explain the increased combustion efficiency of the fuel, since in such a disintegrated state each of the components of the oil would deliver thermal energy at its maximum potential, thus increasing the overall combustion efficiency of the fuel. The observed increase of the flash point may also be explained by said decomposition. It must be understood however, that the above attempts at a theoretical analysis are not to be taken as definite facts.

While a preferred embodiment according to the present invention has been illustrated and described, it is understood that various further modifications may be resorted to without departing from the scope of the appended Claims. For example the number of magnets may be varied providing that at least two are present in order to produce the required field between two like poles.

WHAT I CLAIM IS:—

1. A method for increasing the combustion efficiency of liquid fuel consisting of subjecting the fuel simultaneously to a magnetic field produced between two adjacent like poles and to an electrostatic field a short period of time prior to its combustion.

2. An apparatus to increase the combustion efficiency of liquid fuel, comprising a closed metal receptacle, openings in the opposite ends of said receptacle for inlet and outlet of the fuel, at least two permanent magnets with their like poles adjacent placed in the path of the fuel, two electrodes placed in the path of the fuel and a film of mercury amalgamated with the interior surface of said receptacle.

3. An apparatus as in Claim 2, in which said magnets are centrally perforated discs, their faces being the poles of said magnets.

4. An apparatus as in Claim 2, wherein said electrodes are coaxially mounted manganese steel rods.

REDDIE & GROSE,
Agents for the Applicant,
6, Bream's Buildings,
London, E.C.4.

Printed for Her Majesty's Stationery Office by Wickes & Andrews, Ltd., E.C.4. 684/2.—1959.
Published at The Patent Office, 25, Southampton Buildings, London, W.C.2, from which copies may be obtained.

814,269 COMPLETE SPECIFICATION
1 SHEET

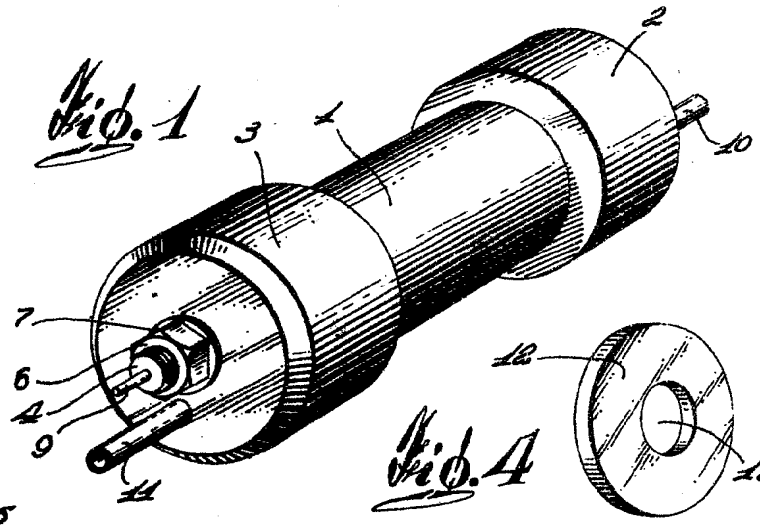

Fig. 1

Fig. 4

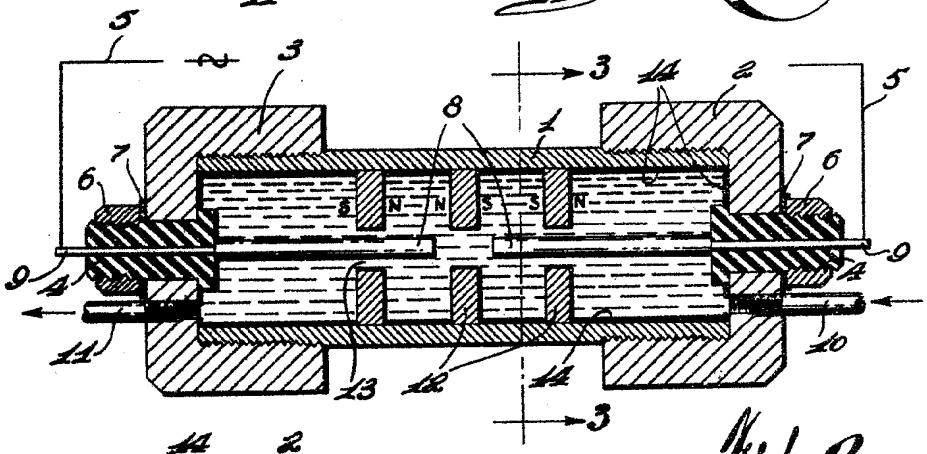

Fig. 2

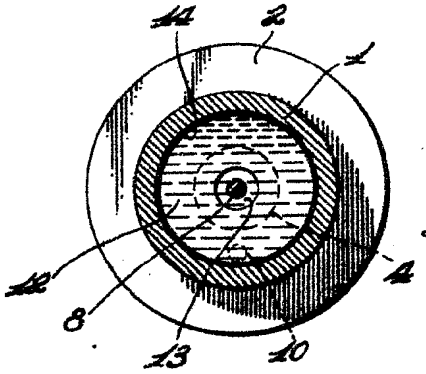

Fig. 3